Complete Summary

GUIDELINE TITLE

Incidentally discovered adrenal mass.

BIBLIOGRAPHIC SOURCE(S)

Choyke PL, Bluth EI, Bush WH Jr, Casalino DD, Francis IR, Jafri SZ, Kawashima A, Kronthal A, Older RA, Papanicolaou N, Ramchandani P, Rosenfield AT, Sandler CM, Segal CM, Tempany C, Resnick MI, Expert Panel on Urologic Imaging. The incidentally discovered adrenal mass. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 8 p. [43 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Choyke PL, Amis ES, Bigongiari LR, Bluth EI, Bush WH, Fritzsche PJ, Holder LE, Newhouse JH, Sandler CM, Segal AJ, Resnick MI, Rutsky EA. The incidentally discovered adrenal mass. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):753-60.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Adrenal mass

GUIDELINE CATEGORY

Evaluation

CLINICAL SPECIALTY

Endocrinology
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of radiologic examinations for the evaluation of adrenal mass

TARGET POPULATION

Patients with adrenal mass

INTERVENTIONS AND PRACTICES CONSIDERED

1. Computed tomography (CT)
    - Without contrast
    - Delayed enhancement
2. Magnetic resonance imaging (MRI)
    - Chemical shift
    - Dynamic enhanced
3. Initial follow-up CT or MRI at 3-6 months and 6-12 months
4. Fluorodeoxyglucose positron emission tomography (PET)
5. Invasive (INV), adrenal gland biopsy
6. Iodocholesterol scan
7. Metaiodobenzylguanidine
8. X-ray
9. Ultrasound (US)

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The

survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by the Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria®

Clinical Condition: Incidentally Discovered Adrenal Mass

Variant 1: No history of malignancy; mass <3 cm in diameter.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, abdomen, without contrast	8	Presumes that a noncontrast CT has not already been performed.
CT, abdomen, delayed enhancement	8	Indicated if noncontrast CT is indeterminate (density >10 HU) or adrenal mass is discovered on early contrast enhanced CT.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Initial follow-up CT or MR at 6 to 12 months	8	Assumes that there is no significant change on the first follow-up exam.
MRI, abdomen, chemical shift	8	May be helpful when non enhanced CT is equivocal.
PET FDG	5	Should be performed if CT and MRI are inconclusive. Some malignancies (including renal cancer) may not be PET avid.
INV, adrenal gland biopsy	4	A biopsy should only be performed if there are no noninvasive options.
MRI, abdomen, dynamic enhanced	2	Promising technique, but not fully studied.
Iodocholesterol scan	2	This agent may be used to detect functionally active adenomas.
MIBG	2	Only for suspicion of pheochromocytoma.
X-ray, abdomen	2	
US, adrenal gland	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: No history of malignancy; mass 3 to 5 cm in diameter. Larger lesions should be removed.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, abdomen, without contrast	8	Presumes that a noncontrast CT has not already been performed.
CT, abdomen, delayed enhancement	8	Indicated if noncontrast CT is indeterminate (density >10 HU) or adrenal mass is discovered on early contrast enhanced CT.
MRI, abdomen, chemical shift	8	Indicated if lesion is identified only on a contrast enhanced CT and further

Radiologic Exam Procedure	Appropriateness Rating	Comments
		characterization is required. If the lesion is indeterminate on a non-contrast CT, the MRI is unlikely to add information. Indicated if mass is discovered incidentally on MRI study.
Initial follow-up CT or MR at 3 to 6 months	8	Assumes that there is no significant change on the first follow-up exam.
INV, adrenal biopsy	6	
FDG PET	6	Should be performed if CT and MRI are inconclusive. Some malignancies (including renal cancer) may not be PET avid.
MRI, abdomen, dynamic enhanced	3	Not proven but promising.
Iodocholesterol scan	3	For functional adenomas.
MIBG	3	Not indicated unless there are biochemical indications of pheochromocytoma.
X-ray, abdomen	2	
US, adrenal gland	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: History of malignancy.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, abdomen, without contrast	8	Presumes that a noncontrast CT has not already been performed.
CT, abdomen, delayed enhancement	8	Indicated if noncontrast CT is indeterminate (density >10 HU) or adrenal mass is discovered on early contrast enhanced CT.
Initial follow-up CT or	8	Assumes that there is no significant

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI at 3 to 6 months		change on the first follow-up exam.
MRI, abdomen, chemical shift	8	Indicated if lesion is identified only on a contrast enhanced CT and further characterization is required. If the lesion is indeterminate on a non-contrast CT, the MRI is unlikely to add information. Indicated if mass is discovered incidentally on MRI study.
INV, adrenal biopsy	8	
FDG PET	6	Documented indications are for lung cancer, colon cancer, lymphoma, and neuroendocrine tumors; however, it is likely that adrenal metastases from other primary tumors may be detectable by FDG PET.
MRI, abdomen, dynamic enhanced	4	
Iodocholesterol scan	2	For functionally active lesions.
MIBG	2	Only for suspicion of pheochromocytoma.
X-ray, abdomen	2	
US, adrenal gland	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

For patients with no history of malignancy, most small (<3 cm) incidentally discovered adrenal masses are benign and an extensive and costly work-up is usually not justified. Endocrinologic evaluation should be considered as subclinical hyperfunction is present in 5% of adrenal incidentalomas. If workup is deemed clinically important, unenhanced CT or chemical shift MRI are useful in effectively excluding a large number of patients from consideration for a malignancy. Follow-up with CT or MRI is another valid method of assessing the nature of the small incidentaloma. FDG PET evaluation or adrenal biopsy should only be considered for lesions considered indeterminate by CT or MRI. For incidentalomas between 3 to 5 cm the following could be considered: follow-up CT, unenhanced CT, delayed enhanced CT, chemical shift MRI, an endocrinologic evaluation, FDG PET, adrenal biopsy (if pheochromocytoma is excluded), or surgery. Follow-up CT or chemical

shift MRI (CSI) are the most reasonable choices. Lesions larger than 5 cm should be removed due to the higher risk of malignancy.

For patients with a history of malignancy, the incidentally discovered adrenal mass is more often malignant and thus even smaller adrenal lesions are suspect. It is important to exclude from further evaluation any patient with widespread nonadrenal metastases since, in this setting, the presence or absence of adrenal metastases is unlikely to influence the patient's outcome. The unenhanced CT, delayed enhanced CT, or chemical shift MRI are relatively inexpensive and readily available tests in this setting. If these are inconclusive, FDG PET should be considered prior to biopsy, as a lesion with a high specific uptake values (SUV) is likely malignant. Adrenal biopsy should be reserved for cases where the non invasive techniques are equivocal. In patients suspected of having a functional lesion, iodocholesterol or MIBG studies may be useful. Plain radiography and ultrasound have a very limited role in assessing adrenal lesions.

Anticipated Exceptions

Patients with pheochromocytoma should not have adrenal biopsy unless properly pre-treated. This diagnosis should be excluded prior to biopsy with urinary or plasma catecholamine levels. In equivocal cases a glucagon stimulation test should be done before biopsy of a potential pheochromocytoma.

Abbreviations

- CT, computed tomography
- FDG, fluorodeoxyglucose
- HU, Hounsfield units
- INV, invasive
- MIBG, metaiodobenzylguanidine
- MR, magnetic resonance
- MRI, magnetic resonance imaging
- PET, positron emission tomography
- US, ultrasound

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic imaging procedures for the evaluation of patients with adrenal mass

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Choyke PL, Bluth EI, Bush WH Jr, Casalino DD, Francis IR, Jafri SZ, Kawashima A, Kronthal A, Older RA, Papanicolaou N, Ramchandani P, Rosenfield AT, Sandler CM, Segal CM, Tempany C, Resnick MI, Expert Panel on Urologic Imaging. The incidentally discovered adrenal mass. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 8 p. [43 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 (revised 2005)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria, Expert Panel on Urologic Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Peter L. Choyke, MD (Principal Author and Panel Chair); Edward Bluth, MD; William H. Bush, Jr, MD; David D. Casalino, MD; Isaac R. Francis, MD; S. Zafar H. Jafri, MD; Akira Kawashima, MD, PhD; Alan Kronthal, MD; Robert A. Older, MD; Nicholas Papanicolaou, MD; Parvati Ramchandani, MD; Arthur T. Rosenfield, MD; Carl M. Sandler, MD; Arthur J. Segal, MD; Clare Tempany, MD; Martin I. Resnick, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

ACR Appropriateness Criteria® Anytime, Anywhere™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria®. Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

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